

REMARKS

The Final Office Action of November 19, 2007, has been received and reviewed.

Claims 1, 5-25, 28-35, 53, and 54 are currently pending in the above-referenced application. Each of claims 1, 5-8, 10-23, 25, 28, 30-35, 53, and 54 has been considered and stands rejected.

It is proposed that claims 1, 7, and 9 be amended and that claim 6 be canceled without prejudice or disclaimer.

Claims 9, 24, and 29 have been withdrawn from consideration.

Reconsideration of the above-referenced application is respectfully requested.

Rejections under 35 U.S.C. § 103(a)

Claims 1, 5-8, 10-23, 25, 28, 30-35, 53, and 54 have been rejected under 35 U.S.C. § 103(a).

There are several requirements in establishing a *prima facie* case of obviousness against the claims of a patent application. All of the limitations of the claim must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Even then, a claim “is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex Inc.*, 82 USPQ2d 1396 (2007). The Office must also establish that one of ordinary skill in the art would have had a reasonable expectation of success that the purported modification or combination of reference teachings would have been successful. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). There must also be “an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR* at 1396. That reason must be found in the prior art, common knowledge, or derived from the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006). A mere conclusory statement that one of ordinary skill in the art would have been motivated to combine or modify reference teachings will not suffice. *KSR* at 1396.

Hikita in View of Eldridge

Claims 1, 5-8, 10-23, 25, 28, 31, 32, 34, 35, 53, and 54 are rejected under 35 U.S.C. § 103(a) for reciting subject matter which is assertedly unpatentable over that taught in U.S. Patent 6,724,084 to Hikita et al. (hereinafter “Hikita”) and U.S. Patent 6,835,898 to Eldridge et al. (hereinafter “Eldridge”).

Hikita teaches a semiconductor device with two IC chips 1 and 2 that are electrically connected with front faces 11 and 21, or active surfaces, facing each other. *See, e.g.*, FIG. 10. Bond pads on the active surfaces 11 and 21 of the IC chips 1 and 2 are electrically connected by functional bumps BF1 and BF2 connected to an internal circuit and surrounding the active regions on the IC chips. Col. 11, lines 44-50. Dummy bumps BD1 and BD2 are provided in opposed relation, electrically isolated from the internal circuits on the active surfaces 11 and 21 of the IC chips. Col. 11, lines 50-56. The dummy bumps BD1 and BD2 are positioned to support the central portion of the IC chips. Col. 12, lines 20-26.

Eldridge teaches resilient electrical contacts that may be used to interconnect terminals of electrical components. Col. 58, lines 41-43. The resilient contacts originate from terminals on a first electrical component and terminate at terminals on another electrical component. Col. 57, lines 45-67. Thus, Eldridge describes resilient contacts bound to a terminal or bond pad on opposing active surfaces of semiconductor dice.

Col. 11, lines 50-51, of Hikita confirms the well known fact that the “active surface” of a semiconductor device is the surface on which “functional devices[s]” are formed. As the Office has noted at pages 8 and 9 of the final Office Action, and as is readily understood by those of ordinary skill in the art, the “back side” of a semiconductor device is the surface that is opposite from the active surface. These definitions are consistent with usage of the term “back side” throughout the specification and in the claims of the above-referenced application.

Independent claim 1, as proposed to be amended, is drawn to a semiconductor device assembly that includes at least one semiconductor device and at least one resiliently compressible spacer protruding from an active surface of the at least one semiconductor device. The at least one resiliently compressible spacer defines a distance that the active surface of the at least one

semiconductor device is spaced apart from the back side of another semiconductor device, which is to be positioned in superimposed relation with the at least one semiconductor device.

It is respectfully submitted that there are at least two reasons that a *prima facie* case of obviousness has not been established against any of claims 1-5, 7-19, 34, 36-45, or 47.

First, neither Hikita nor Eldridge teaches or suggests an assembly with an active surface of at least one semiconductor device facing the back side of another semiconductor device, let alone an assembly in which at least one spacer defines a distance that the active surface of the at least one semiconductor device is spaced apart from the back side of the another semiconductor device. Rather, as noted above, the teachings of both Hikita and Eldridge are limited to assemblies in which the active surfaces of two superimposed semiconductor devices face each other. Nor does either of these references suggest that two superimposed semiconductor device may be oriented in any other way.

Second, it is respectfully submitted that, without the benefit of hindsight that the Office enjoys in examining the above-referenced application, there would have been no motivation for one of ordinary skill in the art to combine teachings from two references that are limited to superimposed semiconductor devices with active surfaces that face one another to develop an assembly in which devices with active surfaces that face in the same direction.

Thus, it is respectfully submitted that a *prima facie* case of obviousness has not been established against claim 1, as is required to maintain a rejection under 35 U.S.C. § 103(a). Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of claim 1 is respectfully requested.

Claims 5, 7, 8, and 10-17 are each allowable, among other reasons, for depending either directly or indirectly from independent claim 1, which is allowable.

In the event that claim 6 is canceled without prejudice or disclaimer, as proposed, the rejection of claim 6 would be moot.

Independent claim 18 is drawn to a semiconductor device assembly that includes a substrate, a first semiconductor device, and a second semiconductor device. The first semiconductor device is associated with the substrate. Mutually laterally spaced discrete spacers protrude from an active surface of the first semiconductor device. At least one of the spacers

communicates with a ground or reference voltage of the first semiconductor device. The back side of the second semiconductor device is positioned on the spacers, which space the second semiconductor device apart from the first semiconductor device. The spacer that communicates with the ground or reference voltage communicates that voltage to the back side of the second semiconductor device.

Neither Hikita nor Eldridge teaches or suggests a second semiconductor device comprising a back side positioned on mutually laterally spaced discrete spacers. Rather, the teachings of both Hikita and Eldridge are limited to assemblies in which the active surfaces of two semiconductor devices face each other.

Furthermore, since the teachings of Hikita and Eldridge are limited to assemblies in which the active surfaces of two electrically connected semiconductor device face each other, it is respectfully submitted that, without the benefit of hindsight that the above-referenced application provides the Office, one of ordinary skill in the art wouldn't have been motivated to combine teachings from Hikita and Eldridge in the manner that has been asserted.

Thus, it is respectfully submitted that a *prima facie* case of obviousness has not been established against independent claim 18, as required to maintain the 35 U.S.C. § 103(a) rejection of that claim. Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejection of independent claim 18 is respectfully requested.

Each of claims 19-23, 25, 28, 31, 32, 34, 35, 53, and 54 is allowable, among other reasons, for depending directly or indirectly from independent claim 18, which is allowable.

Hikita in View of Eldridge and Pu

Claims 16, 30, and 33 stand rejected under 35 U.S.C. § 103(a) for reciting subject matter which is purportedly unpatentable over that taught in Hikita and Eldridge as applied to claims 15 and 18, and further in combination with U.S. Patent 6,593,662 to Pu et al. (hereinafter "Pu").

Each of claims 16, 30, and 33 is allowable, among other reasons, for depending either directly or indirectly from independent claim 18, which is allowable.

Withdrawal of the 35 U.S.C. § 103(a) rejections of claims 1, 3, 5-8, 10-23, 25, 28, 30-35, 53, and 54 is respectfully requested, as is the allowance of each of these claims.

Election of Species Requirement

It is respectfully submitted that since independent claims 1 and 18 remain generic to all of the species of invention that were identified in the Election of Species Requirement in the above-referenced application, claims 7, 24, and 29, which have been withdrawn from consideration pursuant to a species election requirement, should also be considered and allowed. M.P.E.P. § 806.04(d).

Entry of Amendments

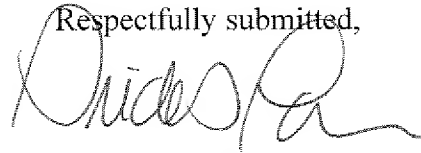
Entry of the proposed claim amendments is respectfully solicited. It is respectfully submitted that the revisions to the claims eliminate issues that remain for purposes of appeal without introducing new matter or necessitating an additional search.

In the event that the proposed amendments to the claims are not entered, entry thereof upon the filing of a Notice of Appeal in the above-referenced application is respectfully requested.

CONCLUSION

It is respectfully submitted that each of claims 1, 5, 7-25, 28-35, 53, and 54 is allowable. An early notice of the allowability of each of these claims is respectfully solicited, as is an indication that the above-referenced application has been passed for issuance. If any issues preventing allowance of the above-referenced application remain which might be resolved by way of a telephone conference, the Office is kindly invited to contact the undersigned attorney.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brick G. Power", written over the typed name.

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